1. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

$$(8 - 4i)(-3 + 2i)$$

A. $a \in [-18, -14]$ and $b \in [25, 37]$

B. $a \in [-38, -31]$ and $b \in [-4, -2]$

C. $a \in [-38, -31]$ and $b \in [3, 5]$

D. $a \in [-18, -14]$ and $b \in [-31, -23]$

E. $a \in [-26, -17]$ and $b \in [-9, -6]$

---

2. Choose the **smallest** set of Real numbers that the number below belongs to.

$$\sqrt{\frac{2145}{11}}$$

A. Rational

B. Whole

C. Irrational

D. Not a Real number

E. Integer

---

3. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

$$(5 - 4i)(-2 - 7i)$$

A. $a \in [-10, -5]$ and $b \in [27.12, 28.4]$

B. $a \in [17, 23]$ and $b \in [41.94, 43.43]$

C. $a \in [17, 23]$ and $b \in [-45.09, -41.71]$

D. $a \in [-40, -37]$ and $b \in [26.67, 27.02]$

E. $a \in [-40, -37]$ and $b \in [-28.56, -26.7]$

4. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

$$\frac{63 - 55i}{4 - 6i}$$

A. $a \in [14.5, 16.5]$ and $b \in [8.5, 10]$

B. $a \in [-2, -1]$ and $b \in [-13.5, -11]$

C. $a \in [10, 11.5]$ and $b \in [157, 158.5]$

D. $a \in [10, 11.5]$ and $b \in [1.5, 4.5]$

E. $a \in [581.5, 582.5]$ and $b \in [1.5, 4.5]$

5. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

$$\frac{-27 - 11i}{5 + 8i}$$

A. $a \in [-6, -5]$ and $b \in [-2, 0]$

B. $a \in [-3, -1]$ and $b \in [0, 2.5]$

C. $a \in [-1.5, 0]$ and $b \in [-4, -2]$

D. $a \in [-224, -222]$ and $b \in [0, 2.5]$

E. $a \in [-3, -1]$ and $b \in [160, 161.5]$

6. Choose the **smallest** set of Complex numbers that the number below belongs to.

$$\frac{\sqrt{119}}{9} + \sqrt{-6}i$$

A. Nonreal Complex

B. Rational

C. Not a Complex Number

D. Pure Imaginary

E. Irrational

---

7. Simplify the expression below and choose the interval the simplification is contained within.

$$13 - 17 \div 14 * 19 - (7 * 12)$$

A. $[-205.86, -201.86]$

B. $[-76.06, -68.06]$

C. $[94.94, 98.94]$

D. $[-100.07, -90.07]$

E. None of the above

---

8. Choose the **smallest** set of Real numbers that the number below belongs to.

$$\sqrt{\frac{15}{0}}$$

A. Whole

B. Rational

C. Irrational

D. Integer

E. Not a Real number

---

9. Choose the **smallest** set of Complex numbers that the number below belongs to.

$$\sqrt{\frac{-2730}{14}} + \sqrt{0}i$$

A. Nonreal Complex

B. Pure Imaginary

C. Rational

D. Irrational

E. Not a Complex Number

---

10. Simplify the expression below and choose the interval the simplification is contained within.

$$12 - 7^2 + 4 \div 10 * 16 \div 2$$

A. $[55.01, 63.01]$

B. $[-38.99, -33.99]$

C. $[63.2, 68.2]$

D. $[-35.8, -29.8]$

E. None of the above
